

REMARKS

Applicants' claims 66 and 68 have been amended to improve the wording of those claims. Claims 76-87 have been added to this application. Therefore, claims 34-56, 58, and 60-87 are now pending in this application.

Claims 68, 34-36, 50-56, 58, and 60-75 have been rejected under 35 USC § 103(a) as being unpatentable over UK Patent Application GB2072516 to Simpson, in view of European Patent Application 0252890 to Söderberg and US Patent 1,701,277 to Shindel. Applicants respectfully submit that this rejection cannot be sustained.

None of the cited references teaches or suggests having a flexible flap held against a flap-retaining surface and being positioned relative to a seal surface such that the flap is pressed towards the seal surface in a substantially abutting relationship therewith under any orientation of the valve when a fluid is not passing through the orifice. As the Examiner is aware, Simpson shows a cantilevered flapper-style valve in Figure 2 where the flexible flap 15 is held against a flap-retaining surface:

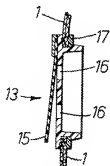


FIG. 2.

As shown in FIG. 2, the Simpson flap 15 is secured to the flap-retaining surface such that the flap-retaining surface is in direct alignment with the seal surface. As such, the Simpson flap is not "held against the flap-retaining surface in a location and a position relative to the seal surface such that the flap is pressed towards the seal surface in a substantial abutting relationship therewith under any orientation of the valve."

The '890 European patent application to Söderberg has been cited for teaching the provision of having the flap pressed against the seal surface. In particular, the Examiner has

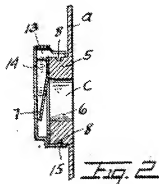
referenced Söderberg at page 4, lines 17-23 for this particular teaching. This language in Söderberg is reproduced below for ease of reference:

In compression-moulded state the rubber material is resilient and if the membrane is given a beveled edge 12 it will seal against the border 3 of the valve seta in closed position, irrespective of the position assumed by the valve device. Furthermore, the rubber material is so light that its weight will not open the valve unless influenced.

Although Söderberg explains that its valve membrane can "seal against the border 3 of the valve seat in a closed position, irrespective of the position of the assumed valve device", this statement does not teach or suggest the particular structure of applicants' invention for having the flap pressed against the seal surface. A careful examination of the whole paragraph which the above-noted quote is taken, reveals that *the ability of the Söderberg valve to remain allegedly closed irrespective of the position of the valve device stems from the particular valve membrane that is used and not from the positioning of the flap-retaining surface relative to the seal surface.* Söderberg states that its "valve membrane is preferably made of a compression-moulded rubber". Söderberg then goes on to state that "the rubber material is resilient and if the membrane is given a beveled edge, it will then seal against the border of the valve seat in a closed position irrespective of the position of the assumed valve device." Please note that in the final sentence of this paragraph, Söderberg continues to reference the rubber material and indicates that it "is so light that the weight will not open the valve unless influenced." Thus, Söderberg asserts that its valve remains closed as a result of the valve membrane material and not as a result of any positioning of the flap-retaining surface relative to the seal surface. In fact, Söderberg does not teach or suggest holding the flap-retaining surface in a location and position relative to the seal surface such that the flap is pressed towards the seal surface. In short, a combination of Simpson and Söderberg would have provided an exhalation valve where the seal surface and flap-retaining surface are in alignment and where a particular membrane is used to enable the membrane to seal against the valve seat in a closed position irrespective of the position of the valve device.

Shindel has been cited as an additional secondary reference. This patent, like Simpson and Söderberg, also does not teach or suggest having "the flexible flap held against the flap-retaining surface in a location and position relative to the seal surface such that the flap is pressed towards

the seal surface...." Shindel shows that the flap-retaining surface is in direct alignment with the seal surface. As such, Shindel does not present a structure that would cause the flap 7 to be pressed towards the seal surface in an abutting relationship with it under any orientation of the valve:



Please also note that Shindel does not teach or suggest a flexible flap that has a peripheral edge that extends 360° about the flap and that includes a stationary segment and a free segment. In Shindel, the whole peripheral edge remains stationary during an exhalation (this is seen in Shindel's FIG. 5).

Thus, the combination of Simpson, Söderberg, and Shindel fails to teach or suggest a basic limitation of the present invention. Under such circumstances, applicants' invention would not have been obvious to a person of ordinary skill within the meaning of 35 USC § 103.

For the above reasons, applicants believe that the claimed invention is patentable over the cited art. Please review the outstanding rejection in light of the comments provided above.

Respectfully submitted,

June 16, 2006

Date

By:

Karl G. Hanson, Reg. No.: 32,900
Telephone No.: 651-736-7776

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833